

MAXDATA Server PLATINUM 1600 IR

User's Manual

Contents

1 Setting up the System	7
Server Position	7
Connecting the System	8
Rear of Server System	8
Control Panel	9
2 Server System Features	11
Connector and Header Locations	12
Configuration Jumpers	14
Light-Guided Diagnostics	15
Memory Fault LEDs	16
RAID Support	16
Hardware Requirements	17
Processor	17
System Memory	17
Supported Memory Modules	19
Memory Operating Modes	20
Optional Hardware	20
Remote Management Module	20
Add-in Modules	20
3 Server Chassis Features	21
Component Identification	21
Internal Components	21
Peripheral Devices	22
HDD LEDs	22
4 Hardware Installations and Upgrades	23
Before You Begin	23
Tools and Supplies Needed	23
System References	23
Removing and Installing the Chassis Cover	23
Removing and Installing the Front Bezel	24
Removing the Front Bezel	24
Installing the Front Bezel	24
Installing a SAS or SATA Hot-swap Hard Disk Drive	25
Removing a Hot-swap Hard Disk Drive	26
Removing and Installing the Air Duct	27
Removing the Air Duct	27
Installing the Air Duct	27
Removing and Installing the PCI Riser Assembly	28
Removing the PCI Riser Assembly	28
Installing the PCI Riser Assembly	28
Installing a PCI Add-in Card	29
Installing an I/O Expansion Module	30
Installing or Replacing a Hot-swap Power Supply	30
Removing a Hot-swap Power Supply	30
Filling Empty Chassis Bays	30
Installing Memory	31
DIMM Blank Population	31
Installing DIMMs	31

Installing or Replacing a Processor.....	32
Installing a Processor	32
Installing the Heatsink(s)	34
Removing a Processor	34
RJ-45 Serial Port Configuration	34
Replacing the Backup Battery	35

5 Server Utilities 37

Using the BIOS Setup Utility	37
Starting Setup.....	37
If You Cannot Access Setup.....	37
Setup Menus.....	37
Clearing the Password	39
Recovering BIOS Defaults.....	39

6 Technical Reference 41

Power Supply Specifications	41
750-W Power Supply Input Voltages.....	41
Efficiency.....	41
750-W Single Power Supply Output Voltages	41
System Environmental Specifications	41

7 Regulatory and Integration Information 43

Product Regulatory Compliance	43
Product Safety Compliance	43
Product EMC Compliance	43
Product Regulatory Compliance Markings	43
Product RoHS Compliance	43
Installation Precautions	43
Use Only for Intended Applications.....	44
Power and Electrical Warnings.....	44
Rack Mount Warnings.....	44

Figures

1. Server system back.....	8
2. Control panel	9
3. Server board connector and component locations.....	12
4. Configuration jumpers	14
5. Light-guided diagnostic LEDs.....	15
6. Memory fault LED location.....	16
7. Memory slot nomenclature, S2600GL	17
8. Memory slot layout, S2600GL.....	17
9. Memory slot nomenclature, S2600GZ	18
10. Memory slot layout, S2600GZ.....	18
11. Chassis components	21
12. Peripherals.....	22
13. HDD LEDs	22
14. Removing the chassis cover	23
15. Removing the front bezel	24
16. Installing the front bezel	24
17. Removing a hot-swap hard drive carrier from the chassis	25
18. Installing a hard disk drive into a drive carrier.....	26
19. Installing a drive assembly into the chassis	26
20. Installing the air duct	27
21. Removing the PCI riser assembly	28
22. Installing the PCI riser assembly	28
23. Installing a PCI add-in card	29
24. Installing an I/O expansion module	30
25. Removing a hot-swap power supply	30
26. Installing memory.....	31
27. Opening the processor socket levers.....	32
28. Opening the load plate	32
29. Inserting the processor	33
30. Removing the protective cover from the load plate	33
31. Closing the load plate	33
32. Closing the locking levers.....	33
33. Replacing the backup battery	36







Tables

1. NIC LEDs.....	8
2. Description of front panel LEDs	10
3. Server system features.....	11
4. 1.5 V ECC UDIMM support.....	19
5. RDIMM support	19
6. LRDIMM support	19
7. Keyboard commands.....	38
8. Efficiency of the power supply	41
9. 750-W power supply system output capability	41
10. Environmental specifications.....	41
11. Product certification markings.....	43

1 Setting up the System

Server Position

Please take note of the following criteria for creating a practical and safe workplace when setting up your computer:

-  The system can be used anywhere the temperature is suitable for people. However, rooms with humidity over 70 %, and dusty or dirty areas are not appropriate. In addition, do not expose the server to any temperatures over +30 °C or under +10 °C.
-  Make sure that the cables connecting the server to peripheral devices are not tight.
-  Make sure that all power and connection cables are positioned so that they are not trip hazards.
-  When you save data to your server's hard disks or to a floppy disk, they are stored as magnetic information on the media. Make sure that they are not damaged by magnetic or electromagnetic fields.
-  Because the electronics in your computer can be damaged by jarring, no mechanical devices should be placed on the same surface as the server. This is especially important for impact printers whose vibrations could damage the hard disk.
-  Please take care to ensure a free air flow to the server at all times. Do not block the ventilation slots of the server case and particularly the power supplies. An insufficient air flow may damage the server and/or its components.



ATTENTION

In order to fully separate the server from current, the power cord must be removed from the wall outlet.

Connecting the System

Rear of Server System

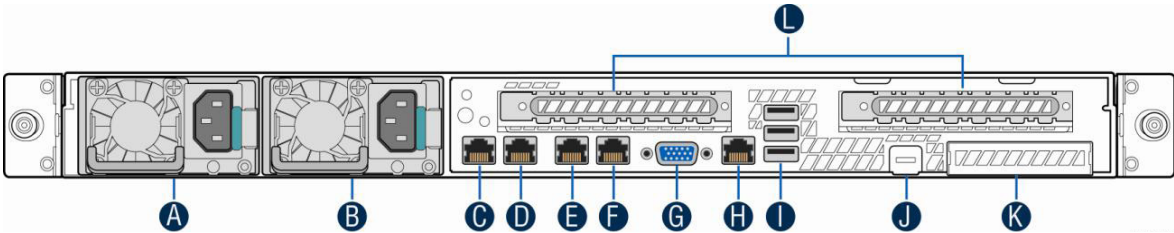


Figure 1. Server system back

- A. Power supply module 1

B. Power supply module 2

C. NIC 1

D. NIC 2

E. NIC 3

F. NIC 4
- G. Video port

H. Serial port A (RJ-45)

I. USB ports

J. RMM 4 NIC port (optional)

K. I/O module (optional)

L. Add-in adapter slots via riser cards 1 and 2

Table 1. NIC LEDs

LED	LED state	Description
Left LED	Off	No network connection
	Solid amber	Network connection in place
	Blinking amber	Transmit/receive activity
Right LED	Off	10 Mbps connection (if left LED is on or blinking)
	Solid amber	100 Mbps connection
	Solid green	1000 Mbps connection

Control Panel

The diagram below shows the features available on the control panel.

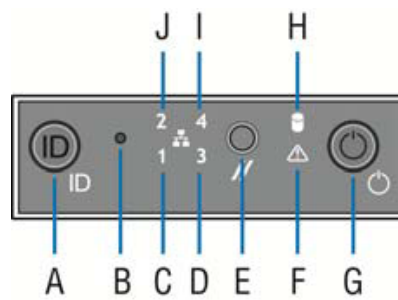


Figure 2. Control panel

- A.** ID button with ID LED
- B.** NMI button (recessed, tool required for use)
- C.** NIC 1 activity LED
- D.** NIC 3 activity LED
- E.** Reset button
- F.** Status LED
- G.** Power button with power LED
- H.** Hard drive activity LED
- I.** NIC 4 activity LED
- J.** NIC 2 activity LED

Descriptions of the front panel LEDs are listed in the following table.

Table 2. Description of front panel LEDs

LED	Color	Condition	Description
Power LED	Green	ON	Power on
		OFF	Off
Status	Green	ON	System ready
	Green	BLINK	System ready, but degraded: redundancy lost such as PS or fan failure; one of several DIMMs not ready; non-critical temperature/voltage threshold
	Amber	BLINK	Non-critical failure: critical temperature/voltage threshold; minimum number fans not present or failed; voltage regulator overheated
	Amber	ON	Critical alarm: CPU 1 missing or failure; voltage fault; no memory present; BMC/video memory failure
		OFF	AC power off; powered down (DC-off state or S5), and no degraded, non-critical, critical conditions exist*
HDD activity	Green	BLINK	Hard drive activity
NIC activity	Green	ON	Linked
	Green	BLINK	LAN activity
		OFF	Idle
ID LED	Blue	ON	Server identification turned on by front ID button
	Blue	BLINK	Server identification turned on by software
		OFF	Server identification off

* When the server is powered down (transitions to the DC-off state or S5), the BMC is still on standby power and retains the sensor and front panel status LED state established before the power-down event. If the system status is normal when the system is powered down (the LED is in a solid green state), the system status LED will be off.

2 Server System Features

This chapter briefly describes the main features of the MAXDATA PLATINUM server system. It provides a list of the server system features and diagrams showing the location of important components and connections on the server system.

Table 3 summarizes the major features of the server system.

Table 3. Server system features

Feature	Description
Dimensions	<ul style="list-style-type: none">• 43.2 mm high• 438 mm wide• 704.8 mm deep• 21 kg max chassis weight
Server board	Intel® S2600GZ/S2600GL
Processor	One or two Intel® Xeon® E5-2600 processors with a thermal design power (TDP) of up to 130 W
System memory	<ul style="list-style-type: none">• S2600GL: 16 DIMM slots, 8 per processor, distributed over 4 memory channels• S2600GZ: 24 DIMM slots, 12 per processor, distributed over 4 memory channels• Up to 768 GB system memory using 32-GB LRDIMMs• 800/1066/1333/1600 MT/s ECC Unbuffered (UDIMM), Registered (RDIMM) or Load-Reduced (LRDIMM) DDR3 memory• No mixing of UDIMMs, RDIMMs and LRDIMMs• DDR3 standard I/O voltage of 1.5 V and DDR3 Low Voltage of 1.35 V
Chipset	<ul style="list-style-type: none">• Intel® C600 Platform Controller Hub (PCH) with integrated storage controller unit (SCU)• RAID upgrade keys supported for the SCU ports
Peripheral interfaces	<p>External connections:</p> <ul style="list-style-type: none">• Two DB-15 video connectors (1 x on back panel + 1 x on front panel)• One RJ-45 serial port A connector• Four RJ-45 network ports for 10/100/1000 Mbit/s• Three USB 2.0 ports on back panel• Two USB 2.0 ports on front panel <p>Internal connections:</p> <ul style="list-style-type: none">• One USB connector for two USB 2.0 ports• One low-profile eUSB connector (2 x 5) for low-profile eUSB SSD• One DH-10 connector for serial port B• Two SATA III ports (6 Gbit/s)• Two quad mini-SAS ports (3 Gbit/s SATA/SAS) (feature activation with RAID upgrade keys; four SATA ports enabled by default)
Graphics	<ul style="list-style-type: none">• On-board Matrox G200 2D video controller• 16 MB graphics memory
LAN	Intel® I350 controller with four ports for 10/100/1000 Mbit/s Ethernet LAN
Expansion capabilities	<ul style="list-style-type: none">• Riser 1:<ul style="list-style-type: none">- 1 x PCIe Gen III x16 from CPU 1• Riser 2:<ul style="list-style-type: none">- 1 x PCIe Gen III x16 from CPU 2• One port for optional hardware RAID expansion (SAS ROC)• One port for optional I/O expansion (4 x 1-Gbit/s NIC or 2 x 10-Gbit/s NIC or FDR Infiniband)• Remote Management Module 4 network and feature key ports

Table 3. Server system features (continued)

Drive options	<ul style="list-style-type: none"> • 4 × 3.5" HDD bays + optical drive bay • 8 × 2.5" HDD bays
Power supply	One or two redundant power supplies with 750 W each
Fans	<ul style="list-style-type: none"> • Six dual-rotor system fans (40 mm × 56 mm, non-hot-swap) with n+1 redundancy • One 40-mm fan for each power supply
Server management	<ul style="list-style-type: none"> • Integrated IPMI 2.0 compatible baseboard management controller • Support for Remote Management Module 4 ("KVM over IP") • Support for system management software • Light-Guided Diagnostics on field replaceable units (FRUs) • Support for Intelligent Power Node Manager

Connector and Header Locations

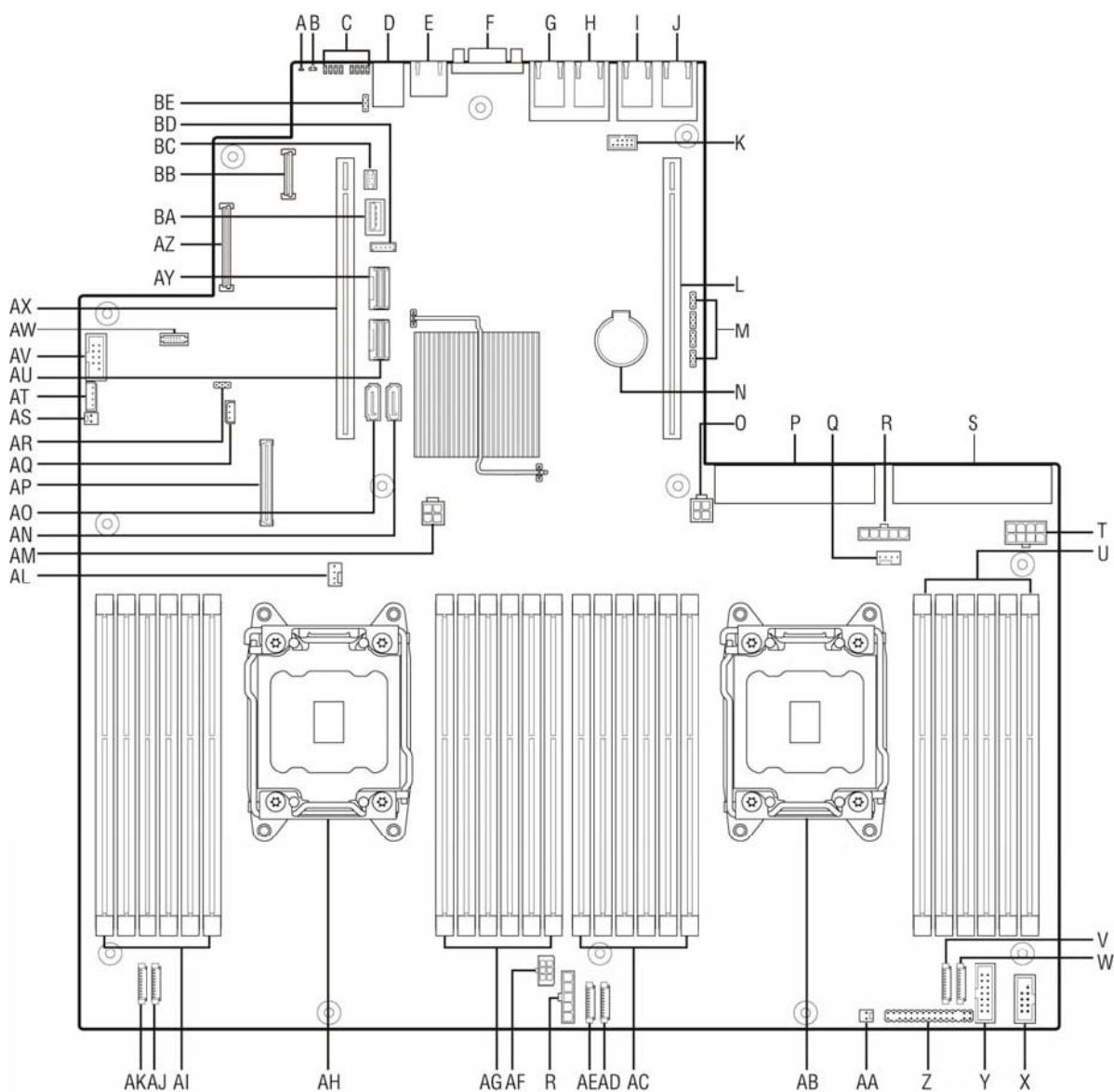


Figure 3. Server board connector and component locations

A.	ID LED	AD.	System fan 4 connector
B.	Status LED	AE.	System fan 3 connector
C.	Diagnostic LEDs	AF.	Optional ODD/SSD power connector
D.	3 USB ports	AG.	CPU 1 DIMM slots – memory banks A and B
E.	Serial port A (RJ-45)	AH.	CPU 1 socket
F.	Video port	AI.	CPU 1 DIMM slots – memory banks C and D
G.	NIC 4	AJ.	System fan 2 connector
H.	NIC 3	AK.	System fan 1 connector
I.	NIC 2	AL.	CPU 1 fan connector
J.	NIC 1	AM.	Optional riser 1 power connector
K.	eUSB SSD connector (optional)	AN.	SATA only port 1
L.	Riser card slot 2	AO.	SATA only port 0
M.	Board update/recovery jumper block	AP.	Optional SAS module connector
N.	CMOS battery	AQ.	3-pin hot-swap backplane SMBUS connector
O.	Optional riser 2 power connector	AR.	BMC firmware force update jumper block
P.	Main power slot 2	AS.	2-pin hard drive activity LED header
Q.	CPU 2 fan connector	AT.	4-pin IPMB connector
R.	CPU power-in and -out connectors (factory cable installed between these connectors)	AU.	4-port SATA/SAS connector (drives 4–7)
S.	Main power slot 1	AV.	Serial port B (DH-10)
T.	Hot-swap backplane power connector	AW.	Optional TPM connector
U.	CPU 2 DIMM slots – memory banks E and F	AX.	Riser card slot 1
V.	System fan 5 connector	AY.	4-port SATA/SAS connector (drives 0–3)
W.	System fan 6 connector	AZ.	Optional I/O module connector
X.	Front panel USB connector	BA.	USB 2.0 port
Y.	Front panel video connector	BB.	Optional RMM 4 NIC
Z.	30-pin (SSI compatible) front panel header	BC.	Optional RMM 4 LITE
AA.	Chassis intrusion switch header	BD.	Optional Intel® C600 RAID upgrade key connector
AB.	CPU 2 socket	BE.	Serial A jumper
AC.	CPU 2 DIMM slots – memory banks G and H		

Configuration Jumpers

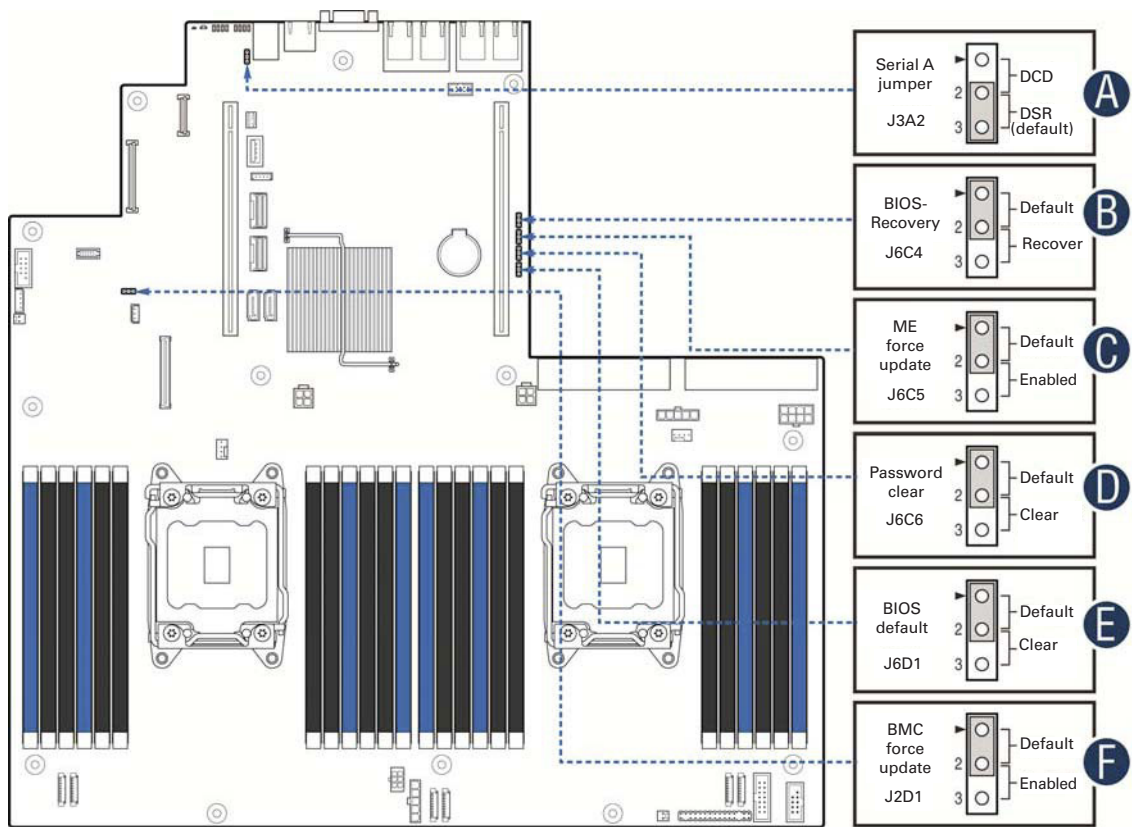


Figure 4. Configuration jumpers

Light-Guided Diagnostics

The server board contains diagnostic LEDs to help you identify failed and failing components, and to help you identify the server from among several servers. Except for the ID LED, the status LED, and the 5V standby LED, the LEDs turn on (amber) only if a failure occurs.

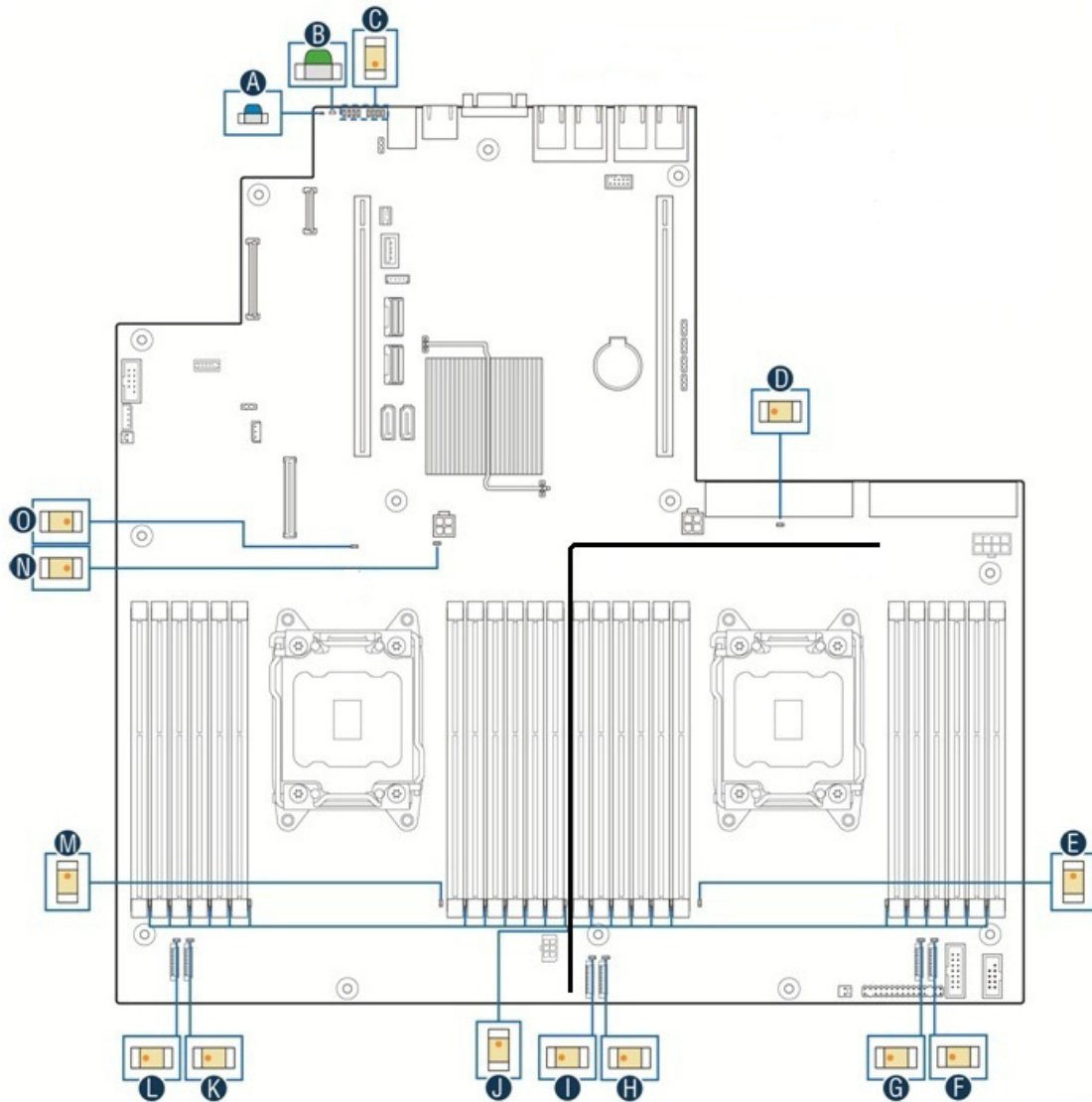


Figure 5. Light-guided diagnostic LEDs

- | | |
|-------------------------------|-----------------------|
| A. System ID | I. System fan 3 fault |
| B. System status | J. Memory fault |
| C. POST code diagnostics | K. System fan 2 fault |
| D. 12 V standby power present | L. System fan 1 fault |
| E. CPU 2 fault | M. CPU 1 fault |
| F. System fan 6 fault | N. CATERR |
| G. System fan 5 fault | O. System power good |
| H. System fan 4 fault | |

Memory Fault LEDs

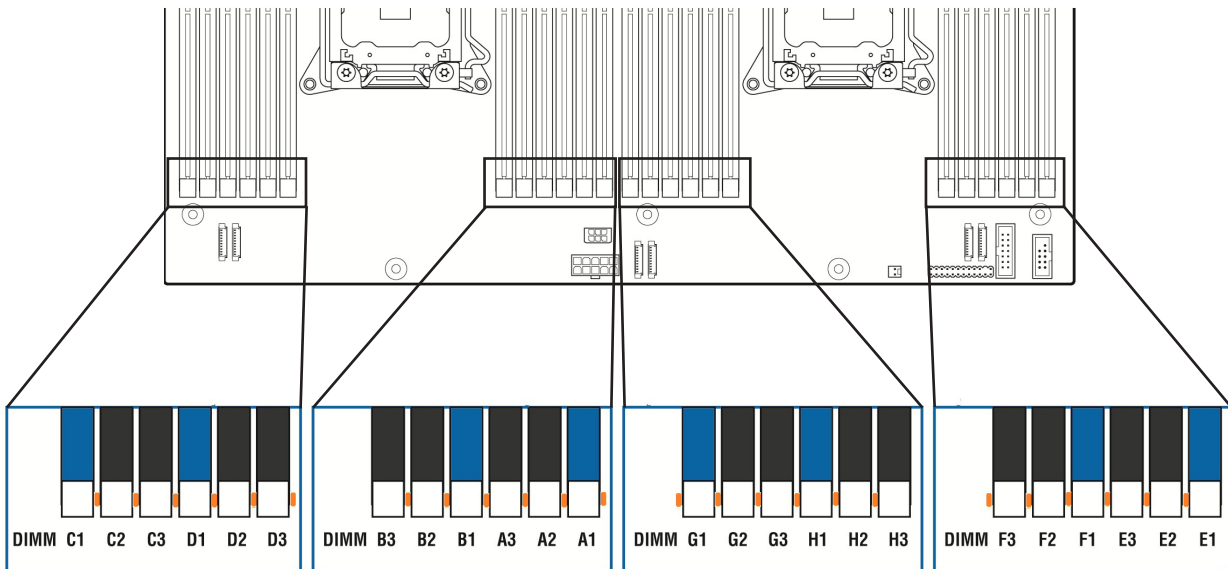


Figure 6. Memory fault LED location

RAID Support

The server board provides two independent controllers: one on-board SATA controller with two 6-Gbit/s connectors (white) and one controller with eight 3-Gbit/s SATA/SAS connectors routed through two mini-SAS SFF-8087 connectors. The features of the SATA/SAS controller are activated by optional RAID keys. Without RAID keys, the SATA/SAS connectors 0 to 3 (labeled "SCU0_(0-3)") are activated in SATA mode. SAS mode and connectors 4 to 7 (labeled "SCU1_(4-7)") can be activated by appropriate RAID keys.

The options for controller configuration are located in the BIOS setup under "Advanced" > "Mass Storage Controller Configuration".

- The "AHCI Capable SATA Controller" allows the following settings:
 - "Enhanced" – supports up to two SATA devices in native IDE mode.
 - "Compatibility" – supports up to two SATA ports in legacy IDE mode.
 - "AHCI" – supports all SATA ports in Advanced Host Controller Interface mode.
 - "RAID Mode" – switches on RAID mode and displays the sub-option "AHCI Capable RAID Options":
 - "INTEL® ESRT2 (LSI)" – Intel® Embedded Server RAID Technology II, support for RAID 0 and 1.
 - "INTEL® RSTe" – Intel® Rapid Storage Technology Enterprise, support for RAID 0 and 1.
- The "SATA/SAS Capable Controller" allows the following settings:
 - "INTEL® ESRT2 (LSI)" – Intel® Embedded Server RAID Technology II
 - "INTEL® RSTe" – Intel® Rapid Storage Technology Enterprise

RAID support depends on the installed RAID key: For RSTe support (RAID 5), no SAS RAID key must be installed. ESRT2 RAID5 can be activated by RAID keys to support RAID 0, 1, 5 and 10.

Hardware Requirements

Processor

One or two Intel® Xeon® E5-2600 processors need to be installed.

System Memory

The server board provides eight memory channels, each with two (S2600GL) or three (S2600GZ) slots.

CPU socket 1								CPU socket 2							
Channel A		Channel B		Channel C		Channel D		Channel E		Channel F		Channel G		Channel H	
A1	A2	B1	B2	C1	C2	D1	D2	E1	E2	F1	F2	G1	G2	H1	H2

Figure 7. Memory slot nomenclature, S2600GL

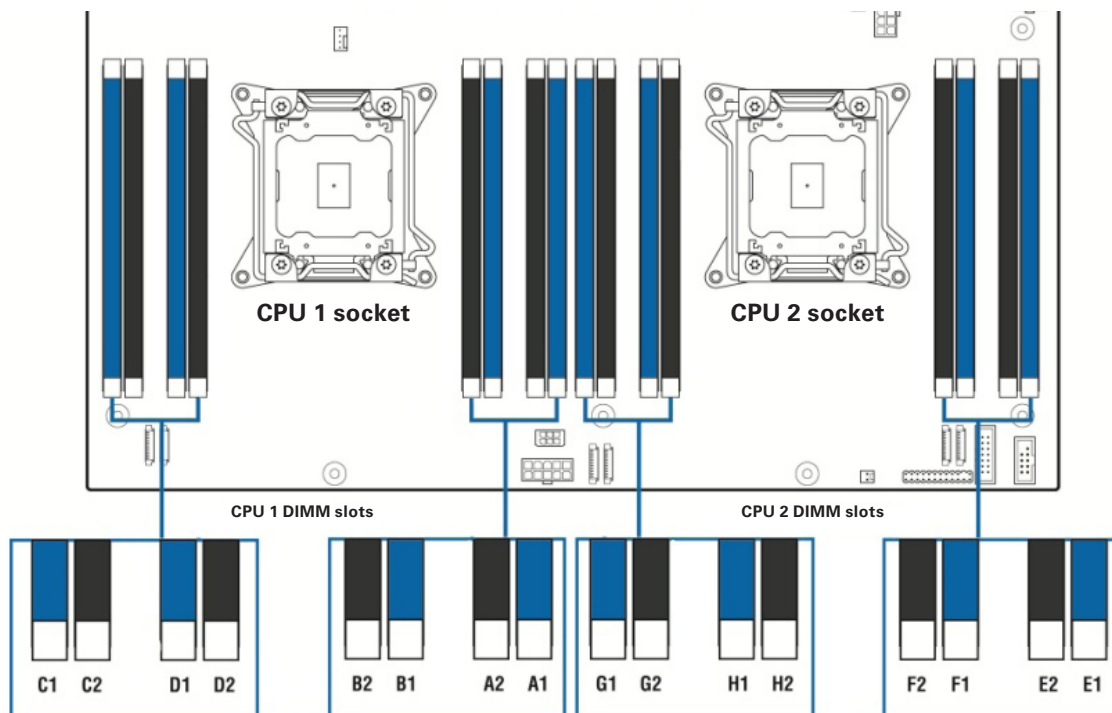


Figure 8. Memory slot layout, S2600GL

CPU socket 1												CPU socket 2											
Channel A			Channel B			Channel C			Channel D			Channel E			Channel F			Channel G			Channel H		
A1	A2	A3	B1	B2	B3	C1	C2	C3	D1	D2	D3	E1	E2	E3	F1	F2	F3	G1	G2	G3	H1	H2	H3

Figure 9. Memory slot nomenclature, S2600GZ

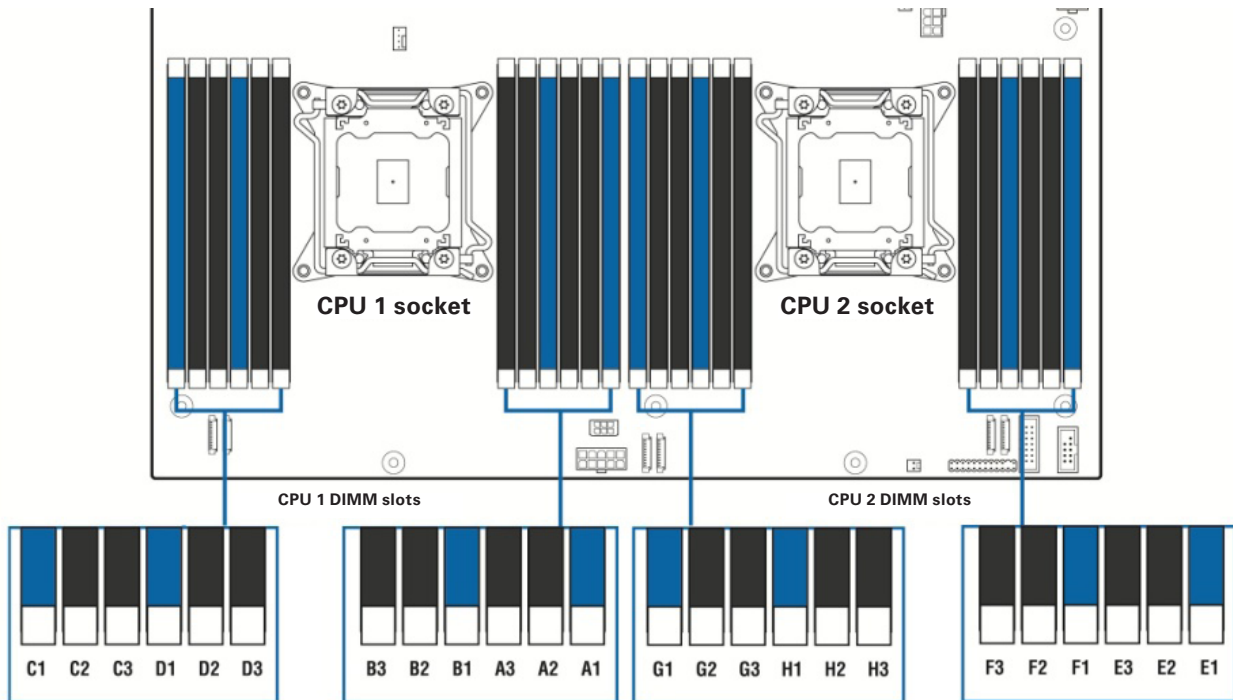


Figure 10. Memory slot layout, S2600GZ

The channels E to H, which are assigned to CPU 2, can only be used when processor 2 has been configured.

If two processors are configured, both processors can access the entire memory via Intel® QuickPath Interconnect (Intel® QPI).

Within a channel, DIMMs must be populated in ascending order, i. e. DIMM 1 must be populated before DIMM 2 can be installed, and DIMM 2 must be populated before DIMM 3 can be installed.

Supported Memory Modules

- DDR3-DIMM: Unbuffered (UDIMM), Registered (RDIMM) or Load-Reduced (LRDIMM)
- Mixing of UDIMMs, RDIMMs and LRDIMMs is not permitted
- 1.5-V and 1.35-V DIMMs (mixing is not permitted)
- DDR3 transfer rates of 800, 1066, 1333 and 1600 MT/s
- 1-Gbit, 2-Gbit and 4-Gbit DDR3 DRAM technology is supported for
 - DDR3 UDIMM – SR: x8 and x16 data bus width; DR: x8 data bus width
 - DDR3 RDIMM – SR, DR and QR: x4 or x8 data bus width
 - DDR3 LRDIMM – QR: x4 and x8 data bus width (direct map or rank multiplication technology, mixing is not permitted)
- Up to 8 ranks per memory channel; 1, 2 or 4 ranks per DIMM



NOTE

SR: Single Rank, DR: Dual Rank, QR: Quad Rank

Table 4. 1.5 V ECC UDIMM support

Ranks and data width	Capacity per DIMM	Speed at 1 or 2 DIMMs per channel
SR x8 or DR x8	1, 2, 4, 8 GB	1066/1333 MT/s

Supported maximum memory configuration: 128 GB (16 × 8 GB)

Table 5. RDIMM support

Ranks and data width	Capacity per DIMM (GB)			Speed (MT/s) and voltage by DIMM per channel (DPC)				
				1 DPC		2 DPC		3 DPC
				1.35 V	1.5 V	1.35 V	1.5 V	1.5 V
SR x8	1	2	4	1066/ 1333	1066/ 1333/ 1600	1066/ 1333	1066/ 1333/ 1600	800/ 1066
DR x8	2	4	8					
SR x4	2	4	8					
DR x4	4	8	16					
QR x8	4	8	16	800	1066	800	800	–
QR x4	8	16	32	800	1066	800	800	–

Supported maximum memory configuration:

- 512 GB with 16 × 32 GB QR x4
- 384 GB with 24 × 16 GB

Table 6. LRDIMM support

Ranks and data width	Capacity per DIMM (GB)		Speed (MT/s) and voltage by DIMM per channel (DPC)			
			1 or 2 DPC		3 DPC	
			1.35 V	1.5 V	1.35 V	1.5 V
QR x8	8	16	1066	1066	1066	1066
QR x4	16	32	1066	1066/1333	1066	1066

Supported maximum memory configuration: 768 GB (24 × 32 GB)

Memory Operating Modes

The following memory operating modes are supported:

- Independent Channel Mode
- Rank Sparing Mode
- Mirrored Channel Mode
- Lockstep Channel Mode

The memory bus operating frequency is always identical for all memory channels.

In Mirrored and Lockstep modes, DIMM sockets must be populated with DIMMs of identical size and organization over all channels.

In Independent Channel mode, the four memory channels of each processor operate independently of each other. The channels can be populated in any order, and the channels can be operated at different DIMM timings.

In Rank Sparing mode, one rank in each channel is reserved as spare. The usable memory is reduced by the memory within this rank. The memory in the spare rank must be equal or greater than the ranks available in the channel.



EXAMPLE

Channels A and B are fitted with 4 × 4 GB SR, 1 rank per channel as spare, usable memory: 8 GB

Channels A and B are fitted with 4 × 4 GB DR, 1 rank per channel as spare, usable memory: 12 GB

In Mirrored Channel mode, the content of channels 0 and 2 as well as that of channels 1 and 3 is mirrored. The usable amount of memory is half of the installed memory. Channels 0 and 2 as well as 1 and 3 must be populated with DIMMs of identical size and organization.

In Lockstep Channel mode, memory is accessed at a width of 128 bit across channels 0 and 1 as well as across channels 2 and 3. Lockstep mode is the only mode that supports SDDC (Single Device Data Correction) for x8 DRAM memory. In this mode, channels 0 and 1 as well as channels 2 and 3 must be populated with DIMMs of identical size and organization.

Optional Hardware

Remote Management Module

The remote management module provides extended functions for server management. A dedicated network card is provided for remote access.

Add-in Modules

The server board provides two add-in slots. Each of these slots uses a PCIe connection (Gen 3, x8).

One add-in slot is available for an optional internal hardware RAID expansion (SAS ROC).

One add-in slot is available for the following I/O expansions:

- Quad-port Gigabit Ethernet I/O module (Intel® Ethernet controller I350)
- Dual-port 10-Gigabit Ethernet I/O module (10GBASE-T, Intel® Ethernet controller X540)
- Dual-port 10-Gigabit Ethernet I/O module (SFP+, Intel® Ethernet controller 82599)
- Single or dual FDR 56 GT/s Infiniband I/O module with QSFP connector (Mellanox CX3 MT27504A1-FCCR-FV controller)

3 Server Chassis Features

This chapter provides diagrams showing the location of important components and connections on the server chassis.

Component Identification

Internal Components

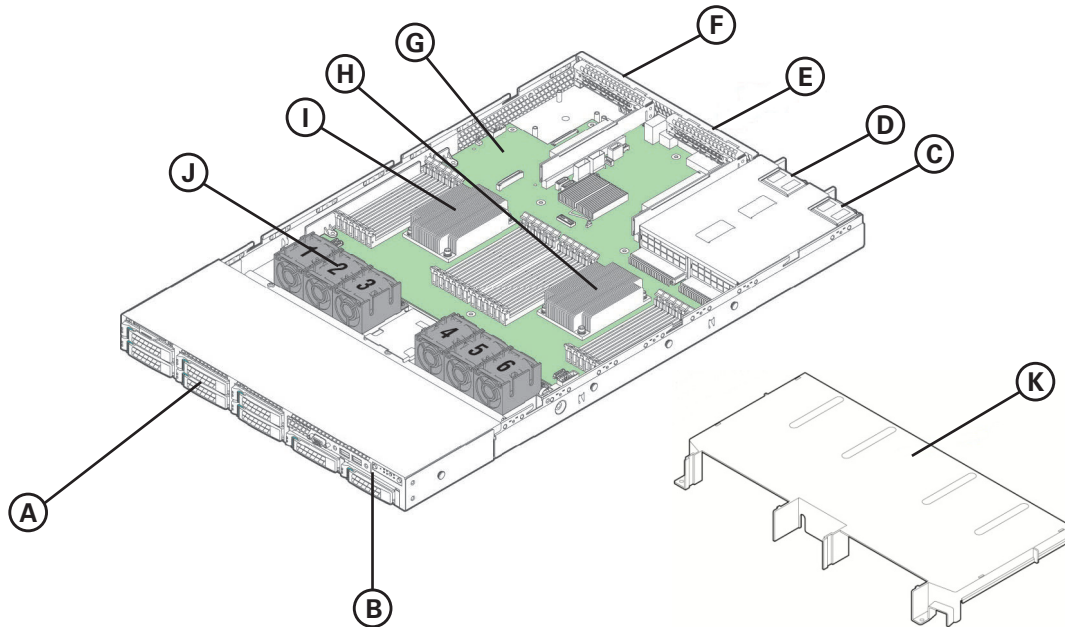


Figure 11. Chassis components

- A. Hot-swap hard drive bays
- B. Front control panel
- C. Power supply module 1
- D. Power supply module 2
- E. Riser card assembly 2
- F. Riser card assembly 1
- G. Server board
- H. CPU 2
- I. CPU 1
- J. System fans
- K. Air duct

Peripheral Devices

Depending on the chassis configuration, options to install hard drives and an optional optical drive vary. The following figures show the hot-swap hard drive bay options.

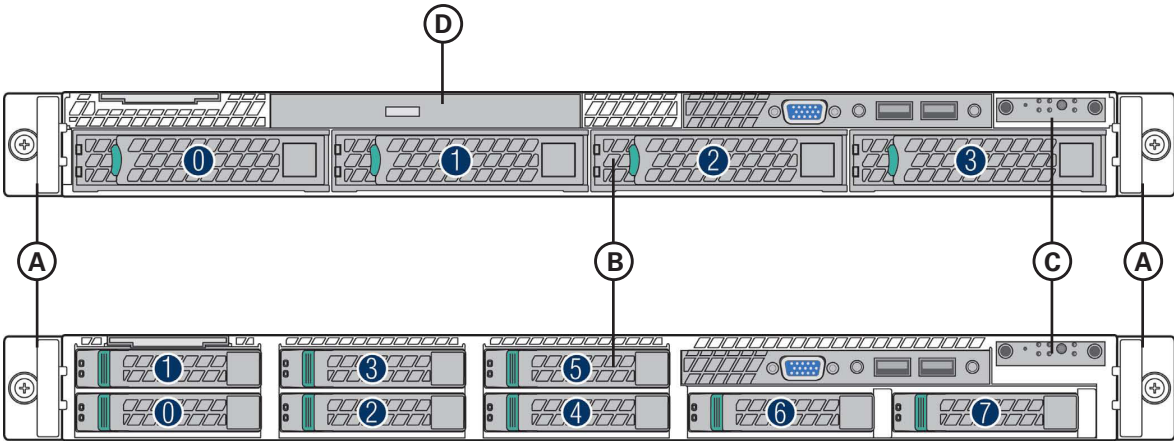


Figure 12. Peripherals

- A. Rack handles
- B. Hard drive bays
- C. Control panel
- D. Slimline optical drive

HDD LEDs

The hot-swap HDDs are equipped with LEDs providing information about the current status of the respective HDD.

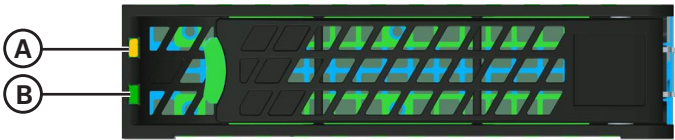


Figure 13. HDD LEDs

Caption	LED	LED state	Description
A.	Status LED, amber	Off	Drive bay not in use or no error
		On	Hard drive fault
		Blinking (1 Hz)	RAID rebuild in progress
		Blinking (2 Hz)	Drive identification on
B.	Activity LED, green	On	SAS HDD: powered on, no activity
		Off	<ul style="list-style-type: none"> SATA HDD: powered on, no activity HDD powered but motor is stopped (power savings mode)
		Blinking	<ul style="list-style-type: none"> SAS HDD: LED blinks off when processing command SATA HDD: LED blinks on when processing command SAS HDD spinning up

4 Hardware Installations and Upgrades

Before You Begin

Before working with your server product, pay close attention to the safety instructions at the beginning of this manual.

Tools and Supplies Needed

- Phillips (cross-head) screwdriver (#1 bit and #2 bit)
- Needle-nosed pliers
- Antistatic wrist strap and conductive foam pad (recommended)

System References

All references to left, right, front, top and bottom assume that the reader is facing the front of the chassis as it would be positioned for normal operation.

Removing and Installing the Chassis Cover

The MAXDATA PLATINUM 1600 IR server chassis must be operated with the top cover in place to ensure proper cooling. You will need to remove the top cover to add or replace components inside the chassis. Before removing the top cover, power down the server and unplug all peripheral devices and the AC power cable.

NOTE

A nonskid surface or a stop behind the chassis may be needed to prevent the chassis from sliding on your work surface.

1. Observe the safety and ESD precautions at the beginning of this book.
2. Turn off all peripheral devices connected to the server. Turn off the server.
3. Disconnect the AC power cord.
4. Remove the shipping screws (A).
5. While pressing the blue buttons at the top of the chassis (B), slide the top cover back until it stops (C).
6. Lift the cover upward to remove it.

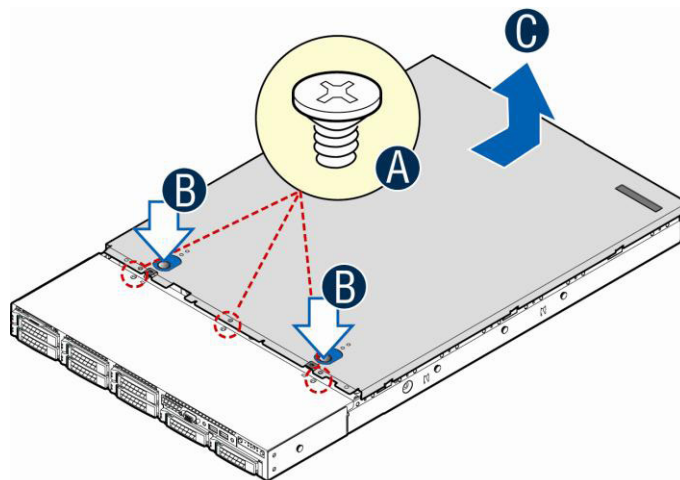


Figure 14. Removing the chassis cover

Removing and Installing the Front Bezel

NOTE

When installing the bezel, make sure that the hole for the front panel is on the upper right side. Before installing the bezel, the rack handles must be installed.

Removing the Front Bezel

1. Unlock the bezel if it is locked.
2. Remove the left end of front bezel from the rack handle (A).
3. Rotate the front bezel anticlockwise to release the latches on the right end from the rack handle (B).

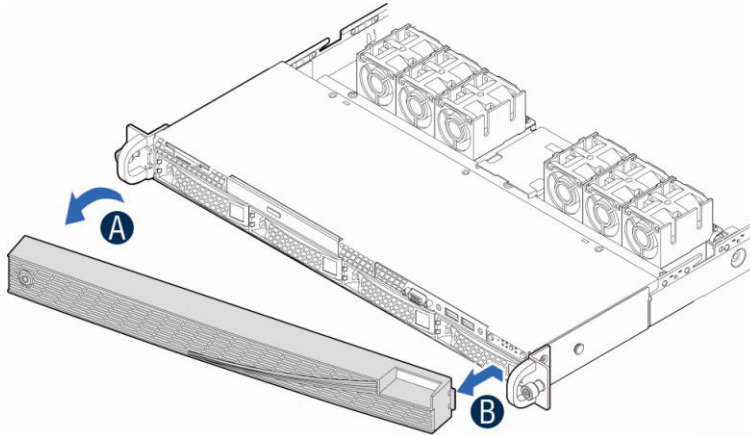


Figure 15. Removing the front bezel

Installing the Front Bezel

1. Lock the right end of the front bezel to the rack handle (A).
2. Rotate the front bezel clockwise until the left end clicks into place (B).
3. Lock the bezel if needed.

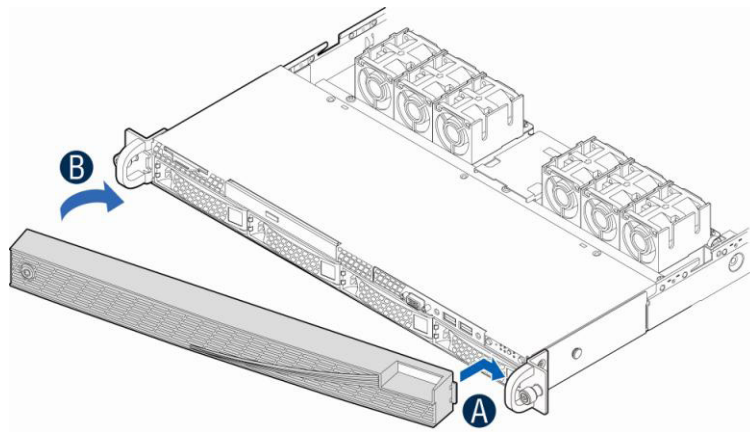


Figure 16. Installing the front bezel

Installing a SAS or SATA Hot-swap Hard Disk Drive

1. Remove the front bezel if it is installed.
2. Press in on the green latch at the front of the hard drive carrier (A).
3. Pull out on the black lever and slide the carrier from the chassis (B).

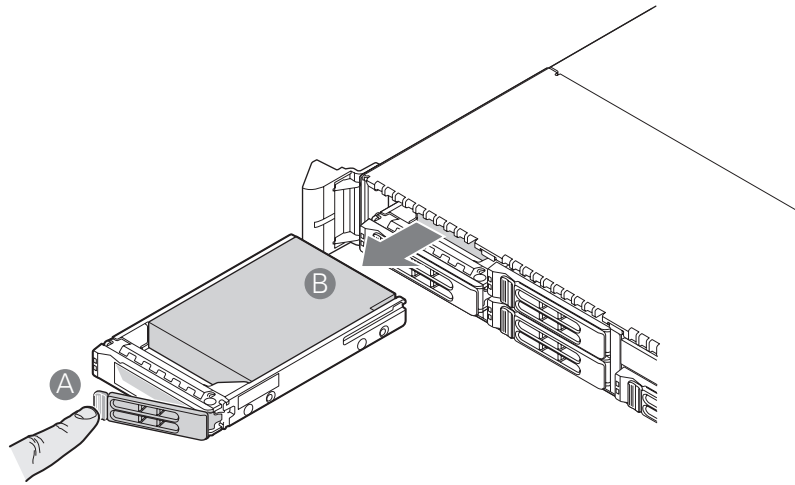


Figure 17. Removing a hot-swap hard drive carrier from the chassis

4. Remove the four screws that attach the plastic retention device or the previously installed hard drive to the drive carrier. Two screws are at each side of the retention device or the hard drive. Store the plastic retention device for future use.
5. Remove the hard drive from its wrapper and place it on an antistatic surface.
6. Set any jumpers and/or switches on the drive according to the drive manufacturer's instructions.
7. With the drive circuit-side down, position the connector end of the drive so that it is facing the rear of the drive carrier.
8. Align the holes in the drive to the holes in the drive carrier and attach it to the carrier with the screws that were attached to the plastic retention device.

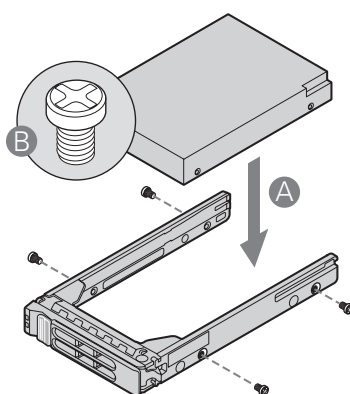


Figure 18. Installing a hard disk drive into a drive carrier

9. With the black lever in the fully open position, slide the drive assembly into the chassis. The green latch at the front of the drive carrier must be to the left. Do not push on the black drive carrier lever until the lever begins to close by itself.
10. When the black drive carrier lever begins to close by itself, push on it to lock the drive assembly into place.

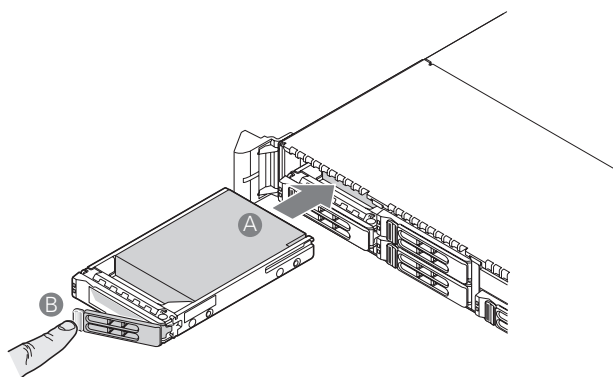


Figure 19. Installing a drive assembly into the chassis

Removing a Hot-swap Hard Disk Drive

1. Remove the front bezel if it is installed.
2. Press in on the green latch at the front of the hard drive carrier.
3. Pull out on the black lever to slide the carrier from the chassis.
4. Remove the four screws that attach the hard drive to the drive carrier. Lift the drive from the carrier. Store the drive in an antistatic bag.
5. If you are not installing a new drive, place the plastic retention device into the drive carrier, using the four screws you removed from the hard drive.
6. With the black lever in the fully open position, slide the drive carrier into the chassis. The green latch must be to the left. Do not push on the black lever until the lever begins to close by itself.
7. When the black lever begins to close by itself, push on it to lock the drive carrier into place.

NOTE

For proper airflow, the hard drive carrier must be replaced in the chassis, even if no hard drive is installed in it. Each HDD carrier must be equipped with either an HDD or a plastic drive blank to maintain proper system cooling.

Removing and Installing the Air Duct

NOTE

Always operate your server system with the air duct in place. The air duct is required for proper airflow within the server system.

Removing the Air Duct

Remove the air duct by lifting it straight up.

Installing the Air Duct

1. Align the two holes on the air duct with the alignment pins on the chassis.
2. Carefully push down the air duct into place, making sure that the cables run through the provided openings.

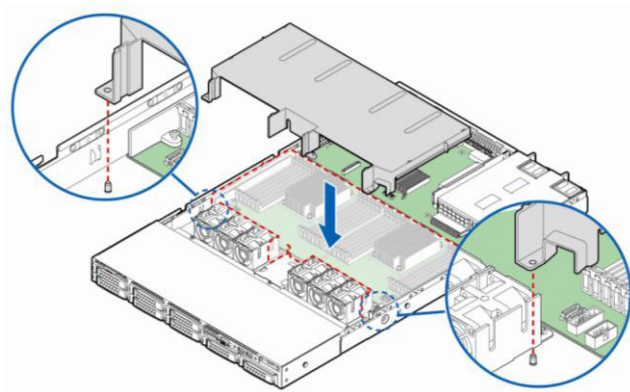


Figure 20. Installing the air duct

Removing and Installing the PCI Riser Assembly

Always operate your server chassis with the PCI riser assembly in place. The riser assembly is required for proper airflow within the chassis. You will need to remove the PCI riser assembly from the chassis to replace the PCI riser connectors, or to add or remove a PCI add-in card.

Removing the PCI Riser Assembly

1. Observe the safety and ESD precautions at the beginning of this book.
2. Power down the server and unplug all peripheral devices and the AC power cable.
3. Remove the chassis cover.
4. Disconnect any cables attached to any installed add-in cards.
5. Grasp the riser assembly with both hands and pull it up to remove it from the system.

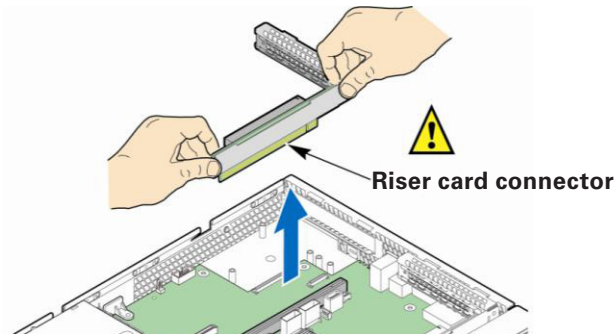


Figure 21. Removing the PCI riser assembly

Installing the PCI Riser Assembly

1. Observe the safety and ESD precautions at the beginning of this book.
2. Power down the server and unplug all peripheral devices and the AC power cable.
3. Remove the chassis cover.
4. Install any necessary add-in cards into the PCI riser assembly.
5. Install any cables onto add-in cards that require them. See your add-in card documentation for information and add-in card requirements.
6. Position the riser card edge connector over the server board riser socket and align the two hooks on the back edge of the riser assembly with the slots on the back of the chassis, then press it straight down into the riser socket.
7. Install the chassis cover.

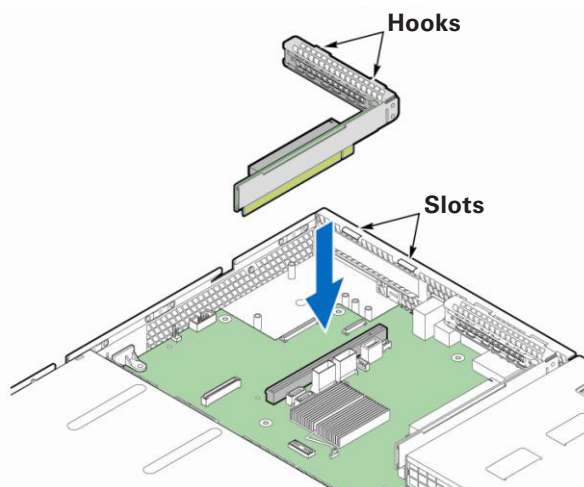


Figure 22. Installing the PCI riser assembly

Installing a PCI Add-in Card

1. Observe the safety and ESD precautions at the beginning of this book.
2. Power down the server and unplug all peripheral devices and the AC power cable.
3. Remove the chassis cover.
4. Remove the PCI riser assembly.
5. Remove the filler panel from the add-in card slot and remove the screw (A).
6. Insert the add-in card until it seats in the riser connector (B).
7. Secure the add-in card with the screw you removed in step 5 (C).

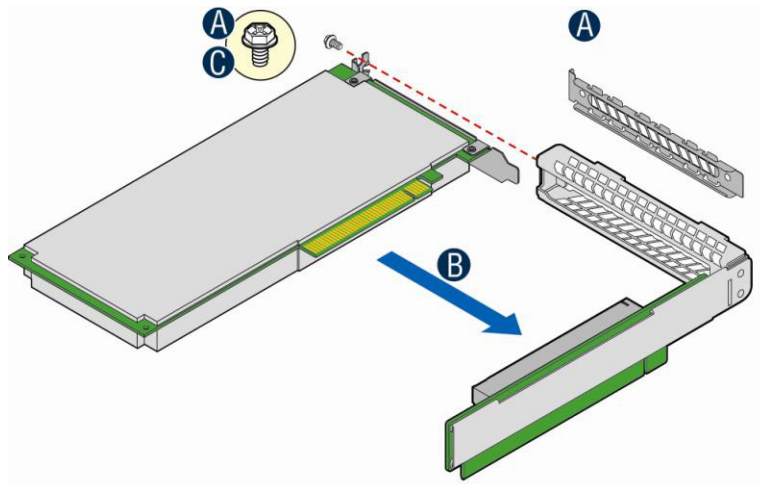


Figure 23. Installing a PCI add-in card



Note

Make sure that all empty add-in card slots have filler panels installed.

8. Install the PCI riser assembly into the server system.
9. Install the server system cover.
10. Plug all peripheral devices and the AC power cable(s) into the server.

Installing an I/O Expansion Module

1. Squeeze the sides of the filler panel to disengage it from the server system back panel and remove it (A).
2. Position the module over the server board, fit the front of the module into the back panel slot (B).
3. Attach the module to the server board connector (C).
4. Secure the module with three screws (D).

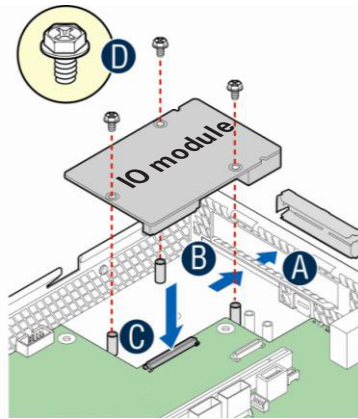


Figure 24. Installing an I/O expansion module

Installing or Replacing a Hot-swap Power Supply

The power supply can be replaced if it, or one of the fans integrated into it, fails. If your server uses a redundant power supply, you do not need to power down your server to replace the failed power supply, as long as the remaining power supply is plugged into an AC power source and is functioning. If you do not have a redundant power supply installed, you must power down your server system before replacing the power supply.

Removing a Hot-swap Power Supply

To replace the power supply, use the following instructions.

1. (Non-redundant power supply only:) Power down the server.
2. Remove the AC power cable from the failed power supply.
3. Press the green latch at the rear of the power supply and pull the power supply from the chassis.

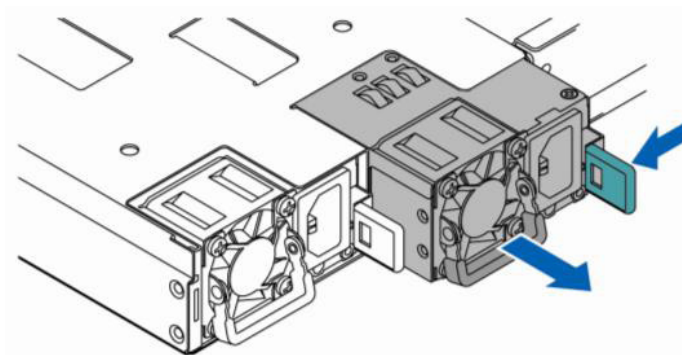


Figure 25. Removing a hot-swap power supply

Filling Empty Chassis Bays

A filler panel, drive blank, or empty drive carrier must be installed into any empty power supply/drive bay.

Installing Memory

The DIMMs are labelled as DIMM_A1 to DIMM_H2 (to DIMM_H3 on the S2600GZ) on the board.

Populate the memory channels (A to D for CPU 1, E to H for CPU 2) in ascending order. Begin populating your memory with DIMM_A1. First add a DIMM to the first socket of each of the following memory channels before installing DIMMs in the second and finally in the third socket (S2600GZ only) of a channel.

Distribute the memory evenly over both processors for systems with two processors. Please refer to chapter 2 for more detailed information on the system memory.

DIMM Blank Population

In certain configurations, DIMM blanks are required in order to maintain adequate thermal levels and airflow. The following system configurations require that specific memory slots be populated at all times using either a DIMM or supplied DIMM blank:

- 16 × 2.5" or 8 × 3.5" hard drive bay configuration with S2600GZ 24-DIMM mainboard:
Memory slot 3 needs to be populated on all memory channels.
- 24 × 2.5" or 12 × 3.5" hard drive bay configuration:
Memory slot 2, and slot 3 on S2600GZ, need to be populated on all memory channels.

Installing DIMMs

To install DIMMs, follow these steps:

1. Observe the safety and ESD precautions at the beginning of this book.
2. Turn off all peripheral devices connected to the server. Turn off the server.
3. Disconnect the AC power cord from the server.
4. Remove the chassis cover and locate the DIMM sockets.

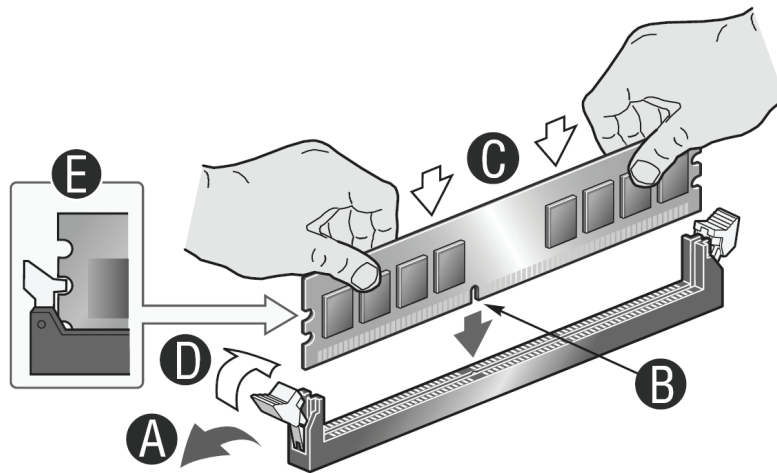


Figure 26. Installing memory

5. Make sure the clips at either end of the DIMM socket(s) are pushed outward to the open position.
6. Holding the DIMM by the edges, remove it from its antistatic package.
7. Position the DIMM above the socket. Align the small notch in the bottom edge of the DIMM with the key in the socket.
8. Insert the bottom edge of the DIMM into the socket.
9. When the DIMM is inserted, carefully push straight down on the top edge of the DIMM until the retaining clips snap into place. Make sure the clips are firmly in place.
10. Replace the chassis cover and reconnect the AC power cord.

Installing or Replacing a Processor



CAUTIONS

Processor must be appropriate: You may damage the server board if you install a processor that is inappropriate for your server.

ESD and handling processors: Reduce the risk of electrostatic discharge (ESD) damage to the processor by doing the following: (1) Touch the metal chassis before touching the processor or server board. Keep part of your body in contact with the metal chassis to dissipate the static charge while handling the processor. (2) Avoid moving around unnecessarily.

Installing a Processor

To install a processor, follow these instructions:

1. Observe the safety and ESD precautions at the beginning of this book.
2. Turn off all peripheral devices connected to the server. Turn off the server.
3. Disconnect the AC power cord(s) from the server.
4. Remove the chassis cover.
5. Remove the memory and processor air duct.
6. Locate the processor sockets (see Figure 3 on page 12).
7. Disconnect and remove any components necessary to access the processor sockets.
8. Open the socket levers: Push down the lever handle on the "OPEN 1st" side and away from the socket to release it (A). Repeat the steps to release the lever on the other side (B).

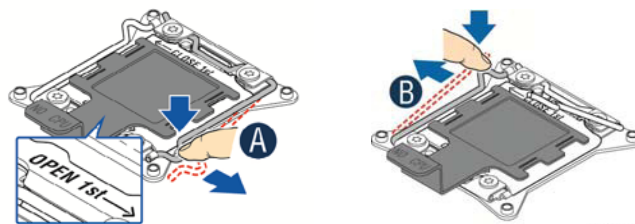


Figure 27. Opening the processor socket levers

9. Open the load plate: Press the locking lever slightly to raise the load plate (A). Open the load plate all the way (B).

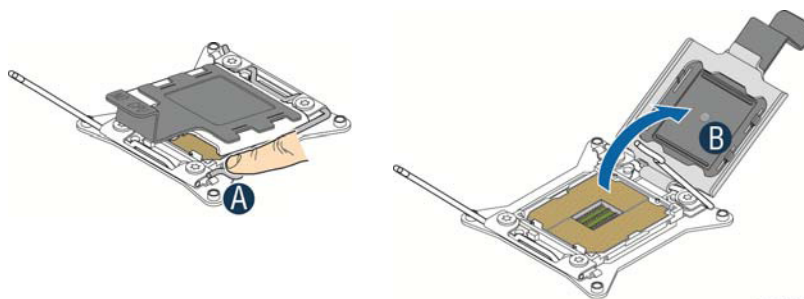


Figure 28. Opening the load plate

10. Install the processor: Take the processor out of the box and remove the protective shipping cover (A). Orient the processor with the socket so that the processor cutouts match the four orientation posts on the socket (B). Note the location of the golden key at corner of processor (C). Gently insert the processor into the socket.



CAUTION

The underside of the processor has components that may damage the socket pins if installed improperly. The processor must align correctly with the socket opening before installation. Do not drop the processor into the socket!

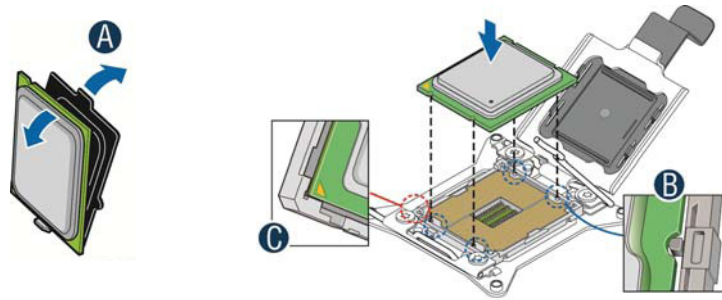


Figure 29. Inserting the processor

11. Remove the protective cover from the load plate and keep it in a safe place for later use.



Figure 30. Removing the protective cover from the load plate

12. Carefully lower the load plate over the processor to close it.

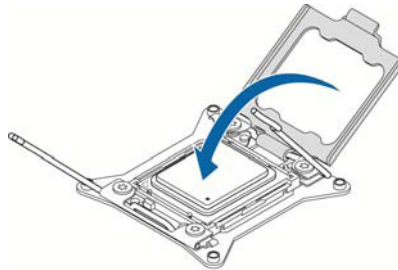


Figure 31. Closing the load plate

13. Latch the locking levers in reverse order compared to opening: Push down the locking lever on the "CLOSE 1st" side (A). Slide the tip of the lever under the notch in the load plate (B). Make sure the load plate tab engages under the socket lever when fully closed. Repeat the steps to latch the locking lever on the other side (C).

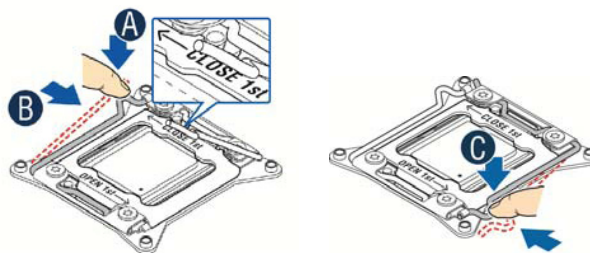


Figure 32. Closing the locking levers

14. Attach the heat sink (see next page).

Installing the Heatsink(s)

1. The heat sink has Thermal Interface Material (TIM) located on the bottom of it. Use caution when you unpack the heat sink so you do not damage the TIM.
2. Set the heat sink over the processor, lining up the four captive screws with the four posts surrounding the processor.
3. Loosely screw in the captive screws on the heat sink corners in a diagonal manner. Do not fully tighten one screw before tightening another.
4. Gradually and equally tighten each captive screw until all screws are tight.

Removing a Processor

1. Observe the safety and ESD precautions at the beginning of this book.
2. Turn off all peripheral devices connected to the server. Turn off the server.
3. Remove the AC power cord(s) from the server.
4. Remove the chassis cover.
5. Remove the memory and processor air duct.
6. Loosen the four captive screws on the corners of the heat sink.
7. Twist the heat sink slightly to break the seal between the heat sink and the processor.
8. Lift the heat sink from the processor. If it does not pull up easily, twist the heat sink again. Do not force the heat sink from the processor. Doing so could damage the processor.
9. Open the load plate (see "Installing a processor").
10. Remove the processor.
11. If installing a replacement processor, see "Installing a processor." Otherwise, close the load plate, reinstall the heatsink(s), the memory and processor air duct and the chassis cover.

RJ-45 Serial Port Configuration

The RJ-45 serial port connector can be configured to support either a DSR signal or a DCD signal. As the server board is shipped, it is configured to support DSR signals. To change the configuration to support DCD signals, a jumper on the board must be changed. Use the following instructions to configure your server board to support DCD signals.

1. Observe the safety and ESD precautions at the beginning of this book.
2. Turn off all peripheral devices connected to the server. Turn off the server.
3. Disconnect the AC power cord from the server.
4. Remove the server's cover.
5. Locate the jumper block for the serial port. See Figure 4 on page 14.
6. Move the jumper from the default position covering pins 1 and 2 to cover pins 2 and 3.

Replacing the Backup Battery

The lithium battery on the server board powers the RTC for up to 10 years in the absence of power. When the battery starts to weaken, it loses voltage, and the server settings stored in CMOS RAM in the RTC (for example, the date and time) may be wrong. Contact your customer service representative or dealer for a list of approved devices.



WARNING

Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the equipment manufacturer. Discard used batteries according to manufacturer's instructions.



WARNUNG

Wenn eine ungeeignete Batterie eingesetzt wird oder die Batterie falsch eingesetzt wird, besteht Explosionsgefahr. Ersetzen Sie verbrauchte Batterien nur durch Batterien gleichen oder äquivalenten Typs, der vom Hersteller empfohlen wurde. Entsorgen Sie die verbrauchte Batterie entsprechend den Anweisungen des Herstellers.



AVERTISSEMENT

Danger d'explosion en cas de remplacement incorrect de la pile. Remplacez-la uniquement par une pile du même type ou d'un type équivalent recommandé par le fabricant. Mettez au rebut les piles usagées en vous conformant aux instructions du fabricant.



OSTRZEŻENIE

Nieprawidłowa wymiana baterii grozi eksplozją. Wymieniać tylko na taki sam lub równoważny typ, zalecany przez producenta. Zużyte baterie utylizować zgodnie z instrukcjami producenta.



ADVARSEL!

Lithiumbatteri - Eksplosionsfare ved fejlagtig håndtering. Udskiftning må kun ske med batteri af samme fabrikat og type. Levér det brugte batteri tilbage til leverandøren.



ADVARSEL

Lithiumbatteri - Eksplosjonsfare. Ved utskifting benyttes kun batteri som anbefalt av apparatfabrikanten. Brukt batteri returneres apparatleverandøren.



VARNING

Explosionsfara vid felaktigt batteribyte. Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren. Kassera använt batteri enligt fabrikantens instruktion.



VAROITUS

Paristo voi räjähtää, jos se on virheellisesti asennettu. Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.

1. Observe the safety and ESD precautions.
2. Turn off all peripheral devices connected to the server. Turn off the server.
3. Disconnect the AC power cord(s) from the server.
4. Remove the server's cover and locate the battery.
5. Gently push the metal tab to unlock the battery.
6. Remove the battery from its socket.

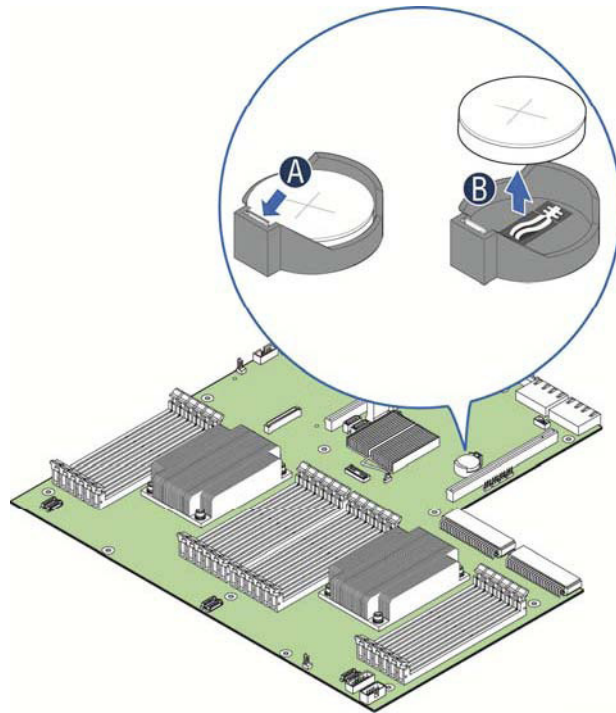


Figure 33. Replacing the backup battery

7. Dispose of the battery according to local ordinance.
8. Remove the new lithium battery from its package, and, being careful to observe the correct polarity, insert it in the battery socket.
9. Close the chassis.
10. Run the setup to restore the configuration settings to the RTC.

5 Server Utilities

Using the BIOS Setup Utility

This section describes the BIOS setup utility options, which is used to change server configuration defaults.

Starting Setup

You can enter and start the BIOS setup under several conditions:

- When you turn on the server, after POST completes the memory test
- When you have moved the CMOS jumper on the server board to the “Clear CMOS” position (enabled)

In the two conditions listed above, during the power on self test (POST), you will see this prompt:

Press <F2> to enter SETUP

In a third condition, when CMOS/NVRAM has been corrupted, you will see other prompts but not the <F2> prompt:

Warning: CMOS checksum invalid

Warning: CMOS time and date not set

In this condition, the BIOS will load default values for CMOS and attempt to boot.

If You Cannot Access Setup

If you are not able to access the BIOS setup, you might need to clear the CMOS memory. For instructions on clearing the CMOS, see “Clearing the CMOS”.

Setup Menus

Each BIOS setup menu page contains a number of features. Except for those features that are provided only to display automatically configured information, each feature is associated with a value field that contains user-selectable parameters. These parameters can be changed if the user has adequate security rights. If a value cannot be changed for any reason, the feature’s value field is inaccessible.

Table 7 describes the keyboard commands you can use in the BIOS Setup menus.

Table 7. Keyboard commands

Press	Description			
F1	Help – Pressing F1 on any menu invokes the general help window.			
← →	The left and right arrow keys are used to move between the major menu pages. The keys have no affect if a submenu or pick list is displayed.			
↑	Select Item up –The up arrow is used to select the previous value in a menu item’s option list or a value field pick list. Pressing the enter key activates the selected item.			
↓	Select Item down –The down arrow is used to select the next value in a menu item’s option list or a value field pick list. Pressing the enter key activates the selected item.			
F5/-	Change Value –The minus key or the F5 function key is used to change the value of the current item to the previous value.This key scrolls through the values in the associated pick list without displaying the full list.			
F6/+	Change Value –The plus key or the F6 function key is used to change the value of the current menu item to the next value.This key scrolls through the values in the associated pick list without displaying the full list. On 106-key Japanese keyboards, the plus key has a different scan code than the plus key on the other keyboard, but it has the same effect.			
Enter	Execute Command –The enter key is used to activate submenus when the selected feature is a submenu, or to display a pick list if a selected feature has a value field, or to select a sub-field for multi-valued features like time and date. If a pick list is displayed, the enter key will undo the pick list, and allow another selection in the parent menu.			
Esc	Exit –The ESC key provides a mechanism for backing out of any field.This key will undo the pressing of the enter key. When the ESC key is pressed while editing any field or selecting features of a menu, the parent menu is re-entered. When the ESC key is pressed in any submenu, the parent menu is re-entered. When the ESC key is pressed in any major menu, the exit confirmation window is displayed and the user is asked whether changes can be discarded.			
F9	<p>Setup Defaults – Pressing F9 causes the following to appear:</p> <table><tr><td>Setup Confirmation</td></tr><tr><td>Load default configuration now?</td></tr><tr><td>[Yes] [No]</td></tr></table> <p>If “Yes” is selected and the enter key is pressed, all setup fields are set to their default values. If “No” is selected and the enter key is pressed, or if the ESC key is pressed, the user is returned to where they were before F9 was pressed without affecting any existing field values.</p>	Setup Confirmation	Load default configuration now?	[Yes] [No]
Setup Confirmation				
Load default configuration now?				
[Yes] [No]				
F10	<p>Save and Exit – Pressing F10 causes the following message to appear:</p> <table><tr><td>Setup Confirmation</td></tr><tr><td>Save Configuration changes and exit now?</td></tr><tr><td>[Yes] [No]</td></tr></table> <p>If “Yes” is selected and the enter key is pressed, all changes are saved and setup is exited. If “No” is selected and the enter key is pressed, or the ESC key is pressed, the user is returned to where they were before F10 was pressed without affecting any existing values.</p>	Setup Confirmation	Save Configuration changes and exit now?	[Yes] [No]
Setup Confirmation				
Save Configuration changes and exit now?				
[Yes] [No]				

Clearing the Password

If the user or administrator password(s) is lost or forgotten, moving the password clear jumper into the "clear" position clears both passwords. The password clear jumper must be restored to its original position before a new password(s) can be set. The password clear jumper is shown in Figure 4 on page 14.

1. Power down the server. Do not unplug the power cord.
2. Open the server chassis.
3. Move the jumper from the default operating position (covering pins 1 and 2) to the Password Clear position (covering pins 2 and 3).
4. Close the server chassis.
5. Power up the server and wait 10 seconds.
6. Power down the server.
7. Open the server chassis and move the jumper back to the default position (covering pins 1 and 2).
8. Close the server chassis.
9. Power up the server.

Recovering BIOS Defaults

If you are not able to access the BIOS setup screens, the BIOS default jumper will need to be used to reset the system configuration. The BIOS default jumper is shown in Figure 4 on page 14.

1. Power down the system. Do not unplug the power cord.
2. Open the server chassis.
3. Move the jumper from the default operating position (covering pins 1 and 2) to the reset/clear position (covering pins 2 and 3).
4. Wait 5 seconds.
5. Unplug the power cord(s).
6. Move the jumper back to the default position (covering pins 1 and 2).
7. Close the server chassis.
8. Plug in the power cord(s) and power up the server.

6 Technical Reference

Power Supply Specifications

750-W Power Supply Input Voltages

- 100–127 V~ at 50/60 Hz; 9.2 A max.
- 200–240 V~ at 50/60 Hz; 4.4 A max.

Efficiency

The following table shows the efficiency of the power supply with an input voltage of 230 volts.

Table 8. Efficiency of the power supply

Load (% of maximum)	10 %	20 %	50 %	100 %
Efficiency	82 %	90 %	94 %	91 %

750-W Single Power Supply Output Voltages

The following table shows the current totals provided by the power supply before the DC converters on the mainboard.

Table 9. 750-W power supply system output capability

Voltage	Maximum Current
+12 V	62 A
+12 V standby	2.1 A



CAUTION

The expansion slots on the server board are rated for no more than 25 Watts for any one slot. The average current usage per slot should not exceed 13 Watts.

System Environmental Specifications

Table 10. Environmental specifications

Temperature	Non-operating	–40 °C to 70 °C.
	Operating	10 °C to 30 °C; derated 0.5 °C for every 1000 ft (305 m) to a maximum of 10,000 ft.
Humidity	Non-operating	90 % relative humidity (non-condensing) at 30 °C.
Acoustic noise		7 Bels in sound power for a typical office ambient temperature (18–24 °C). The selection of peripherals may change the noise level.

7 Regulatory and Integration Information

Product Regulatory Compliance

Product Safety Compliance

The server complies with the following safety requirements:

- EN 60950 (European Union)
- IEC 60950 (International)
- CE – Low Voltage Directive (73/23/EEC) (European Union)

Product EMC Compliance

The server has been tested and verified to comply with the following electromagnetic compatibility (EMC) regulations:

- EN 55022 (Class A) – Radiated & Conducted Emissions (European Union)
- EN 55024 (Immunity) (European Union)
- CE – EMC Directive (89/336/EEC) (European Union)

Product Regulatory Compliance Markings

This product is marked with the following Product Certification Markings:

Table 11. Product certification markings

CE Mark	
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Product RoHS Compliance

Restriction of Hazardous Substances: This server system is compliant to European Directive 2002/95/EC (RoHS).

Installation Precautions

Observe all warnings and cautions in the installation instructions.

To avoid injury, be careful of:

- Sharp pins on connectors
- Sharp pins on printed circuit assemblies
- Rough edges and sharp corners on the chassis
- Hot components (like processors, voltage regulators and heat sinks)
- Damage to wires that could cause a short circuit

Refer computer servicing to qualified technical personnel.

Use Only for Intended Applications

This server was evaluated as Information Technology Equipment (I.T.E.) for use in offices, homes, schools, computer rooms and similar locations. The suitability of this product for other applications or environments (such as medical, industrial, alarm systems, test equipment, etc.) may require further evaluation.

Power and Electrical Warnings



CAUTION

The power supply in this product contains no user-serviceable parts. Do not open the power supply. Hazardous voltage, current and energy levels are present inside the power supply. Return to manufacturer for servicing.

When replacing a hot-plug power supply, unplug the power cord to the power supply being replaced before removing it from the server.

To avoid risk of electric shock, turn off the server and disconnect the power cord, telecommunications systems, networks and modems attached to the server before opening it.

The power supply cord(s) is/are the main disconnect device to AC power. The socket outlet(s) must be near the equipment and readily accessible for disconnection.

The power supply cord(s) must be plugged into socket-outlet(s) that is/are provided with a suitable earth ground.

Rack Mount Warnings

The equipment rack must be anchored to an unmovable support to prevent it from tipping when a server or piece of equipment is extended from it. The equipment rack must be installed according to the rack manufacturer's instructions.

Install equipment in the rack from the bottom up, with the heaviest equipment at the bottom of the rack.

Extend only one piece of equipment from the rack at a time.

You are responsible for installing a main power disconnect for the entire rack unit. This main disconnect must be readily accessible, and it must be labeled as controlling power to the entire unit, not just to the server(s).

To avoid risk of potential electric shock, a proper safety ground must be implemented for the rack and each piece of equipment installed in it.